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Description of two new species of the *Tychius morawitzi*-group (Coleoptera Curculionidae)

Abstract — *Tychius banfii* n. sp. and *T. pinnai* n. sp., distributed in Anterior Asia and in Egypt, are described. They are closely related to and possibly vicarious with *T. winkleri* Franz and *T. urbanus* Faust respectively, species with more eastern distribution (from Iran to Afghanistan), from which they essentially but consistently differ in the shape of the claw process. Moreover, an evolutionary hypothesis of this character, on the ground of biological observations, is given.

Riassunto — Descrizione di due nuove specie del gruppo del *Tychius morawitzi* (Coleoptera Curculionidae).

Vengono descritti il *Tychius banfii* n. sp. e il *T. pinnai* n. sp. diffusi in Asia Anteriore e in Egitto. I due taxa sono strettamente imparentati e probabilmente vicarianti rispettivamente con *T. winkleri* Franz e *T. urbanus* Faust, specie a distribuzione più orientale (dall'Iran all'Afghanistan) e dalle quali differiscono per la forma delle appendici ungueali. Di tale carattere viene proposta un'ipotesi evolutivistica sulla base di osservazioni biologiche.

Key words: Curculionidae, *Tychius*, *Tychius morawitzi*-group, taxonomy, zoogeography.

In recent years, after the revision of the *Tychius morawitzi*-group (Caldara, 1986), we had the opportunity to newly examine a lot of specimens of these interesting species. This study allows us now to describe two new species closely related to *T. winkleri* Franz and *T. urbanus* Faust.

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Tychius banfii n. sp.

Holotypus: ♂ «Heluan, Egitto, 29.6.33, C. Koch» (MSNM). 151 Paratypi: 1 ♀ «ditto» (MMi), 12 ♂♂ and 15 ♀♀ «ditto, 12.7.33» (MSNM), 2 ♂♂ and 2 ♀♀ «Heluan, Eg. 12.7.33, W. Wittmer» (MSNM), 1 ♂ and 4 ♀♀ «Egypt, Bahrain, 13.vi.1935, J. Omer-Cooper/Armstrong College Expedition, B.M. 1935-354» (MLO), 1 ♀ «ditto, Gara, 4.vii.1935» (MLO), 1 ♂ «ditto, Siwa, 13.vii.1935» (MLO), 1 ♂ «ditto, Siwa, 19.vii.1935» (MLO), 1 ♂ «Al-Maádi, 29.V.59/Egypt, leg. R. Vesely (CFre), 1 ♂ «Wadi Hof, 29.V.59/Egypt, leg. R. Vesely» (CDi); 1 ♀ «ditto» (CFre), 1 ♂ «ditto, 14.6.59» (CFre), 1 ♀ «Hofuf, 23.5.77/Saudi Arabien, W. Büttiker» (MBa), 1 ♀ «Wadi Shaib, Luha, 27.5.76/Saudi Arabien, W. Büttiker» (MBa); 1 ♂ «Jordanien-O., J. Klapperich/Oase Asrak, 4.56, 500 m» (CFri), 1 ♂ «J. Klapperich, S. Jordanien/Wadi Main, 500 m/Südl. Madaba, 25.5.1957» (MBu), 1 ♂ «K. Eregli, 1.7.1980, Y. ot» (CL), 1 ♂ «Nizip, 15.07.1984, Z-2» (CL), 1 ♂ «Bagdad, IV.1936, Frey» (CF), 19 ♂♂ and 23 ♀♀ «Mesopotamia, Assur und Mossul» (MB), 15 ♂♂ and 14 ♀♀ «Mosul, Mesopotamia» (CO), 3 ♂♂ and 4 ♀♀ «ditto» (CF), 9 ♂♂ and 2 ♀♀ «ditto» (CMe), 1 ♂ «S. Iran, Baghu, 25.5.1973/Loc. No.212, Exp. Nat. Mus. Praha» (CFre), 1 ♀ «S. Iran, Issin, 28.4-6.5.1977, Hormogzan/Loc. No. 320, Exp. Nat. Mus. Praha» (MPr), 1 ♂ «S. Iran, Jashak 69 Km SE of Khornuj, 110 m, 20-21.4.1977, Fars/Loc. No. 304, Exp. Nat. Mus. Praha» (CFre), 1 ♂ «ditto» (MPr), 2 ♂♂ and 5 ♀♀ «Kurdistan, Shakhlava» (MPr).

Description - Length: 2.1-2.6 mm. Vestiture: as in all other species of morawitzi-group, on dorsum nearly uniformly greyish to light brown (sometimes paler on sides and 1st elytral interstria). Rostrum: in dorsal view gradually attenuated from base to apex, in lateral view curved and feebly tapered from base to apex (rostrum length/prothorax length ♂ 0.76-0.83, ♀ 0.81-0.88). Eyes: flat Prothorax: slightly transverse (width/length 1.10-1.19), with moderately rounded sides, moderately convex on dorsum. Elytra: subrectangular (length/width 1.30-1.40), at base distinctly wider than prothorax (elytral width/prothorax width 1.26-1.35). Legs: 3rd tarsal article bilobate, distinctly wider than 2nd one, claw processes elongate and separated from claw at base. Genitalia: median lobe of aedeagus elongate and markedly narrowed from base to apex, which is pointed; spermatheca and spiculum ventrale as in all other species of morawitzi-group.

Comparative notes - Similar to *T. winkleri* Franz, except claw with more elongate process separated from it at base, female rostrum in lateral aspect slightly more straight, sides of prothorax usually less rounded, narrow apical portion of the median lobe of aedeagus slightly more elongate and less abruptly divided from wide basal portion.

Distribution (fig. 1) - Egypt, Saudi Arabia, Jordan, South Anatolia, Iraq, West and South Iran.

Etymology - The new species is dedicated to our dear colleague, Dr. Enrico Banfi, Curator of the Botanical Section of the Museum of Natural History of Milan, who gave us valuable suggestions on the botanical observations reported in our paper.

Tychius pinnai n. sp.

Holotypus: ♂ «Al-Maádi, 29.V.59/Egypt, leg. R. Vesely» (MPr). 40 Paratypi: 1 ♂ and 1 ♀ «ditto, 14.6.59» (CFre), 1 ♂ «Borgash, 31.7.32, Halfa/

Egypt, Min. Agric. (Egypt), Coll. R. Mabrouk» (CF), 1 ♂ «Cairo Umgebung/Coll. Dr. J. Fodor» (MBu), 1 ♀ «Egypt, Dakhla Oasis, 3-8.VI.1966, J. Maldonado C.» (MW), 1 ♂ «W. Digla, Egypt/Coll. H. Priesner, Aegypten» (MBa), 1 ♂ «Wadi Hof, 29.V.59/Egypt, leg. R. Vesely» (CC), 1 ♂ and 2 ♀♀ «ditto» (CFre), 2 ♂♂ and 1 ♀ «Oasis Kharga, Egypt, Dr. H. Priesner» (MBa), 1 ♀ «Marg, Juin 1908/Coll. Alfieri, Egypte» (MW), 1 ♂ «Marg, 30.1.33, Halfa/Egypt, Min. Agric. (Egypt), Coll. M. Aly» (CF), 1 ♀ «Meadi, 24.5.12/Coll. Alfieri, Egypte» (MW), 1 ♂ «Kerdasa, 2.8.31/Egypt, Min. Agric. (Egypt), Coll. R. Mabrouk» (CF), 1 ♂ «19.6.29/Egypt, Min. Agric. (Egypt), Coll. Andres» (CF), 1 ♂ «Egypt, Siwa, 24.V.1935, J. Omer-Cooper/Armstrong College Expedition, B.M. 1935-354» (MLo), 1 ♀ «ditto, 27.V.1935» (MLo), 1 ♂ «ditto, 28.V.1935» (MLo), 1 ♂ «ditto, 31.V.1935» (MLo), 1 ♀ «ditto, 24-28.vi.1935» (MLo), 1 ♂ and 2 ♀♀ «ditto, 6.vii.1935» (MLo), 1 ♂ and 1 ♀ «ditto, 7.vii.1935» (MLo), 1 ♂ «ditto, 9.vii.1935» (MLo), 1 ♂ «ditto, 15.vii.1935» (MLo), 1 ♂ and 1 ♀ «ditto, 16.vii.1935» (MSNM), 1 ♂ «ditto, 20-21.vii.1935» (MLo), 2 ♂♂ «ditto, 6.viii.1935» (MLo), 1 ♂ «ditto, Siwa, Tagzertie, 13.vii.1935» (MLo), 1 ♀ «ditto, Gara, 4.vii.1935» (MLo), 1 ♀ «Tourab, 1.6.13/Coll. Alfieri, Egypte» (MW), 1 ♂ «Jordanien, J. Klapperich/Jordantal 350 m v. M/Am Tafen Meer, 8.7.1964» (CFri), 1 ♀ «Kirikhan, 07.07.1984. Z-3» (CL).

Description - Length: 2.1-2.5 mm. Vestiture: as in all other species of morawitzi-group, on dorsum nearly uniformly greyish to light brown (sometimes paler on sides and 1st elytral interstria). Rostrum: in dorsal view subparallel sided, in lateral view curved and tapered especially in apical third (rostrum length/prothorax length ♂ 0.82-0.88, ♀ 0.91-0.96). Eyes: flat. Prothorax: slightly transverse (width/length 1.08-1.16), with moderately rounded sides, moderately convex on dorsum. Elytra: subrectangular (length/width 1.34-1.44), at base distinctly wider than prothorax (elytral width/prothorax width 1.29-1.37). Legs: 3rd tarsal article bilobate, distinctly wider than 2nd one, claw processes elongate and separated from claw at base. Genitalia: median lobe of aedeagus elongate, distinctly narrowed from base to apex, ending in blunt point; spermatheca and spiculum ventrale as in all other species of morawitzi-group.

Comparative notes - Very similar to *T. urbanus* Faust, but claw with more elongate process separated from it at base, sides of prothorax on average less rounded.

Distribution (fig. 2) - Egypt, Jordan, central part of South Anatolia.

Etymology - We dedicate our new species to Prof. Giovanni Pinna, Director at the Museum of Natural History of Milan, who gave us the opportunity to examine the interesting *Tychius*-specimens preserved in the entomological collections of the Museum.

Discussion

The two new species had been previously classified respectively as *T. winkleri* Franz and *T. urbanus* Faust (Caldara, 1986), the only species in the *T. morawitzi*-group, and also in the genus *Tychius* (Caldara, 1990), where the claw process appeared to show two different shapes: either joined to or separated at base from the claw. Also due to the examination of scarce material from some important parts of the distribution area, it was emphasized that the difference in claw morphology follows a definite geographic distri-

bution, namely in both cases the claw process is joined to the claw in the eastern specimens and separated from it in the western ones.

This character does not show variability, and intermediate degrees are absent. Moreover, as afterwards explained, it is almost certain that the two western taxa differ from their vicarious eastern species in the host plant. Therefore, in such a uniform group where the species differ only in constant but few characters (Caldara, 1986), these data as a whole have persuaded us that we have two allopatric species distinct from *T. winkleri* and *T. urbanus*. The very similar distributions of *T. winkleri* and *T. urbanus* are now reduced in comparison with those previously reported (Caldara, 1986) as follows: *T. winkleri*-central part of northern Anatolia, North Iran, southern Sovietic Republics, Afghanistan; *T. urbanus*-eastern Anatolia, Iran, southern Sovietic Republics.

In the light of these observations, it appears necessary to dwell upon the curious distribution of the species in relation to the morphology of the claw. In fact, in the western part of the distribution of the group, only species with the claw process separated at base from the claw (*T. bedeli*, *T. franzi*, *T. crypticus*, *T. banfii* and *T. pinnai*) are present. This is particularly evident in the three couples of vicarious species *T. winkleri* - *T. banfii*, *T. urbanus* - *T. pinnai* and *T. morawitzi* - *T. crypticus*, since *T. bedeli* and *T. franzi* spread out also to the East. Since it is difficult to think that this unipolar morphological change in the claw shape is only casual and without any practical utility, the most immediate hypothesis to explain this evolutionary parallelism is that it might be due to the use of different host plants in the western species in comparison with the eastern ones. For instance, on a plant with pubescent portions specimens with a better chance of firm grip should be favoured and selectioned, namely specimens with claw process more elongate and separated from the claw at base which can act as additional claw.

Unfortunately, this hypothesis is at present not strengthened by reliable data due to two main difficulties. First of all, little is known on the biology of the *T. morawitzi*-group and the only sure data are that all the species live in desert zones on plants of the genus *Alhagi* (Fabaceae) and that six of the seven species living in eastern Sovietic Republics — *T. morawitzi*, *T. sulphureus*, *T. franzi*, *T. dieckmanni*, *T. winkleri* and *T. urbanus* (nothing is known for *T. bedeli*) — have been collected on *Alhagi camelorum* (Becker, Faust), *A. persarum* (Kostal) and *A. pseudalhagi* (Kostal) and usually co-living on the same plant species (Kostal, in litt, 1989). The specific name of the host plants of the western species has never been reported.

Secondly, careful works of taxonomic revision of the genus *Alhagi* are not available and therefore also the geographic distribution of the species is not well known. Recently, in the Checklist of the Mediterranean flora (Greuter et al., 1989), the nomenclature of the two more widely distributed species of the genus is as follows: *A. graecorum* Boiss. (= *A. mannifera* Jaub. & Spach) and *A. maurorum* Medicus (= *A. pseudalhagi* Desv., = *A. camelorum* Fischer, = *A. persarum* Boiss. & Buhse). Regarding the distribution, they appear parapatric: *A. graecorum* is reported from Greece, Aegean Isles, Cyprus, Anatolia, Near East, Egypt, Libia, Algeria, whereas *A. maurorum* from Aegean Isles, Cyprus, Anatolia, Lebanon and Syria. Moreover, the latter, with

a clearly more eastern distribution, is possibly widely distributed in southern Sovietic Republics. Finally, if the systematic value of the pubescence reported in less recent works as a key character in the separation of species were confirmed, our hypothesis might be strengthened. In fact, it results that the species variously named as *camelorum*, *pseudalhagi* and *persarum* and widely distributed in Caucasus and in Turkestan, differs from the one distributed in Egypt and in Near East for its glabrous habitus.

As far as the *T. morawitzi*-group in general is concerned, it is very interesting, as above mentioned, that several species seem to live on the same plant species in the same locality and on the same day. With regard to this, Kostal (in litt. 1989) reports that he sometimes collected three to four species on a single *Alhagi*-species and even six species at Karaulbazar in the desert Kyzylkum. In other groups of *Tychius*, the co-existence of two species on the same plant (*T. meliloti* and *T. bicolor*, *T. meliloti* and *T. brevisculus*, *T. medicaginis* and *T. aureolus*, *T. caldarai* and *T. kulzeri*, etc.) is well known, but never more than two (Caldara, 1990). What occurs in the *T. morawitzi*-group is surely surprising and puts interesting ecological questions on the different niches utilized by the various species for co-existence. We think that a careful biological study of these species will reveal very interesting data for both the entomology as a rule and the taxonomy of *T. morawitzi*-group in particular.

We report new data on distribution of the species of the *T. morawitzi*-group to be added to the previous ones (Caldara, 1986). All of the up to now known localities are shown on the enclosed maps (figs. 1-4).

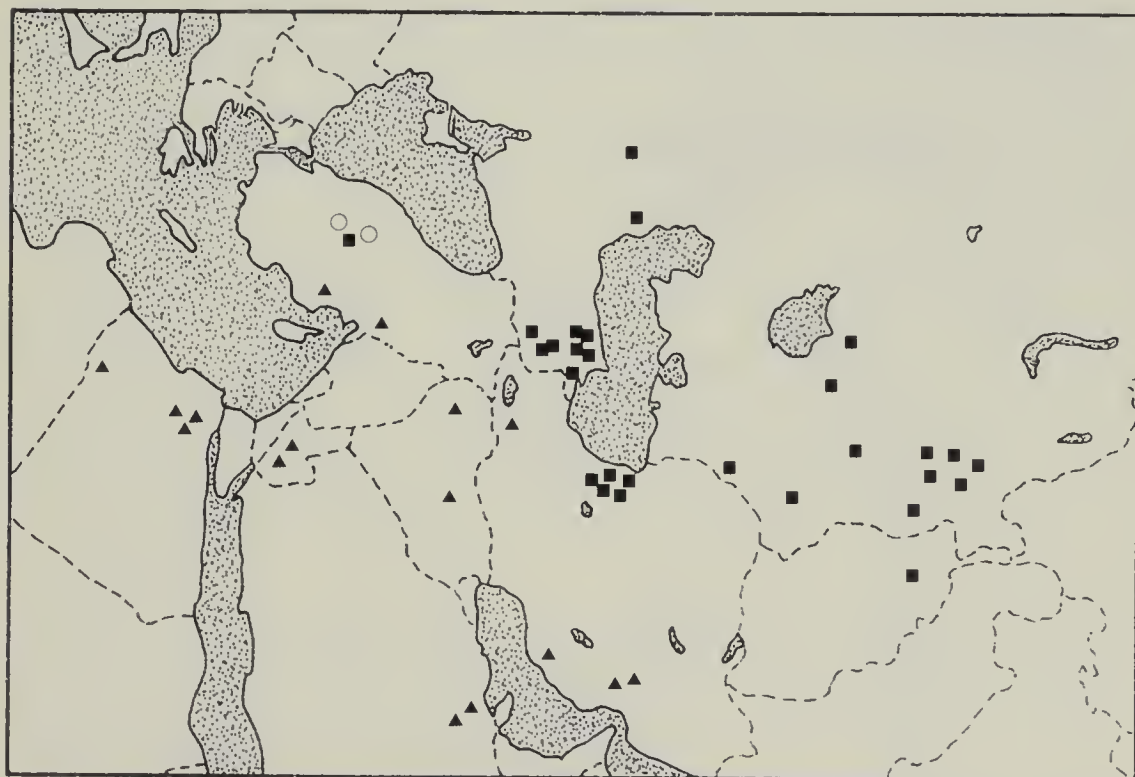


Fig. 1 - Distribution: ■ *T. winkleri* (Franz); ▲ *T. banfii* n. sp.; ○ *T. winkleri* (Franz) sensu Caldara, 1986 not verified.

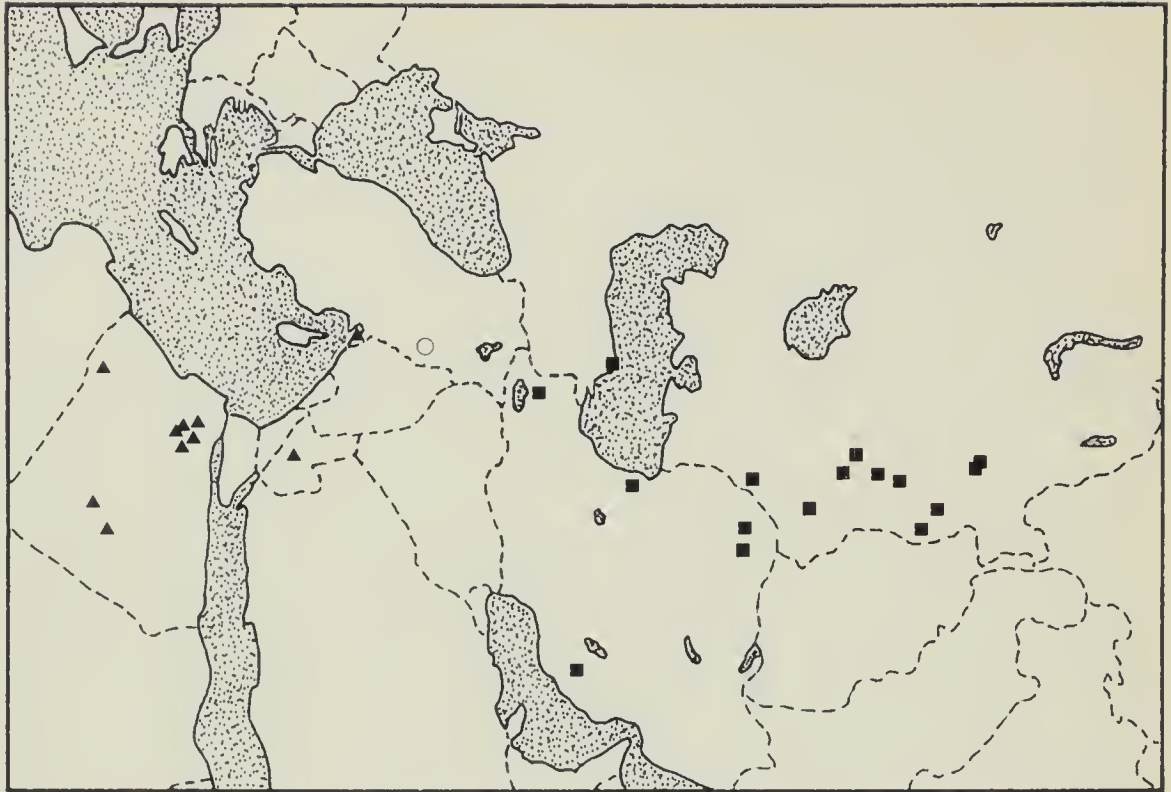


Fig. 2 - Distribution: ■ *T. urbanus* Faust; ▲ *T. pinnai* n. sp.; ○ *T. urbanus* Faust sensu Caldara, 1986 not verified.

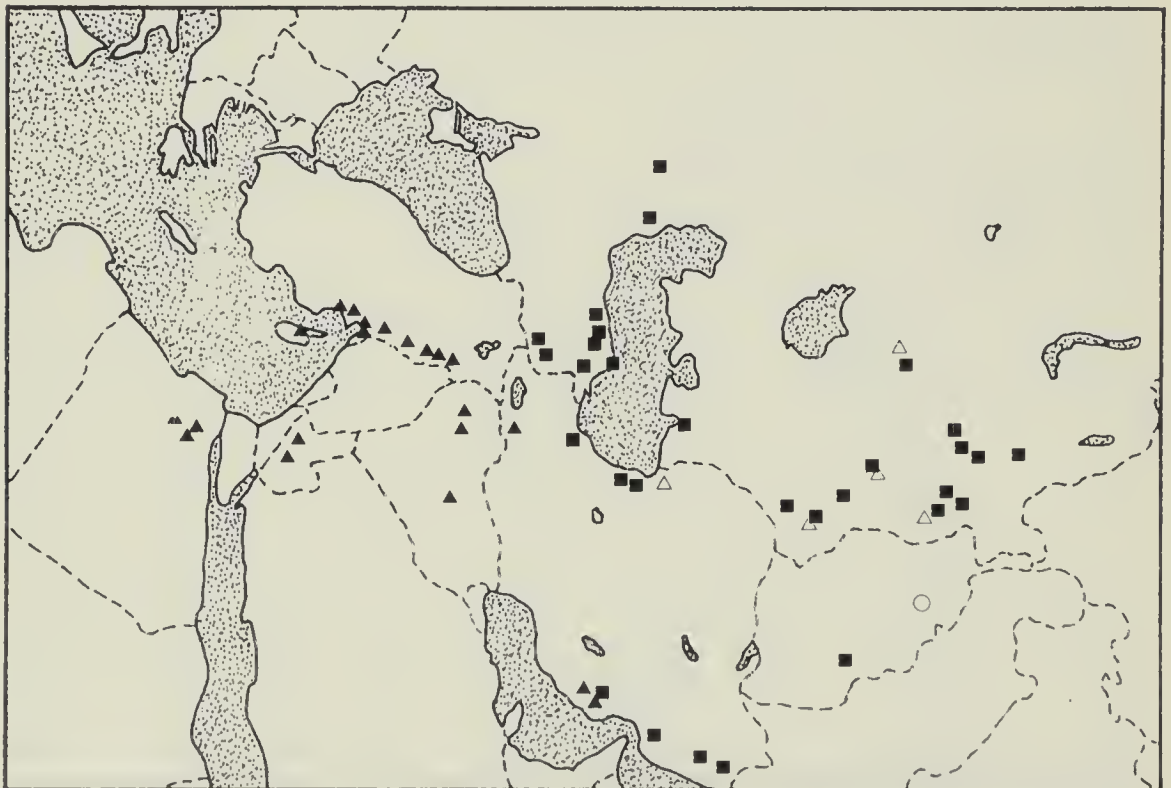


Fig. 3 - Distribution: ■ *T. morawitzi* Becker; ▲ *T. crypticus* Caldara; ○ *T. peneckeanus* Voss; △ *T. dieckmanni* Caldara.

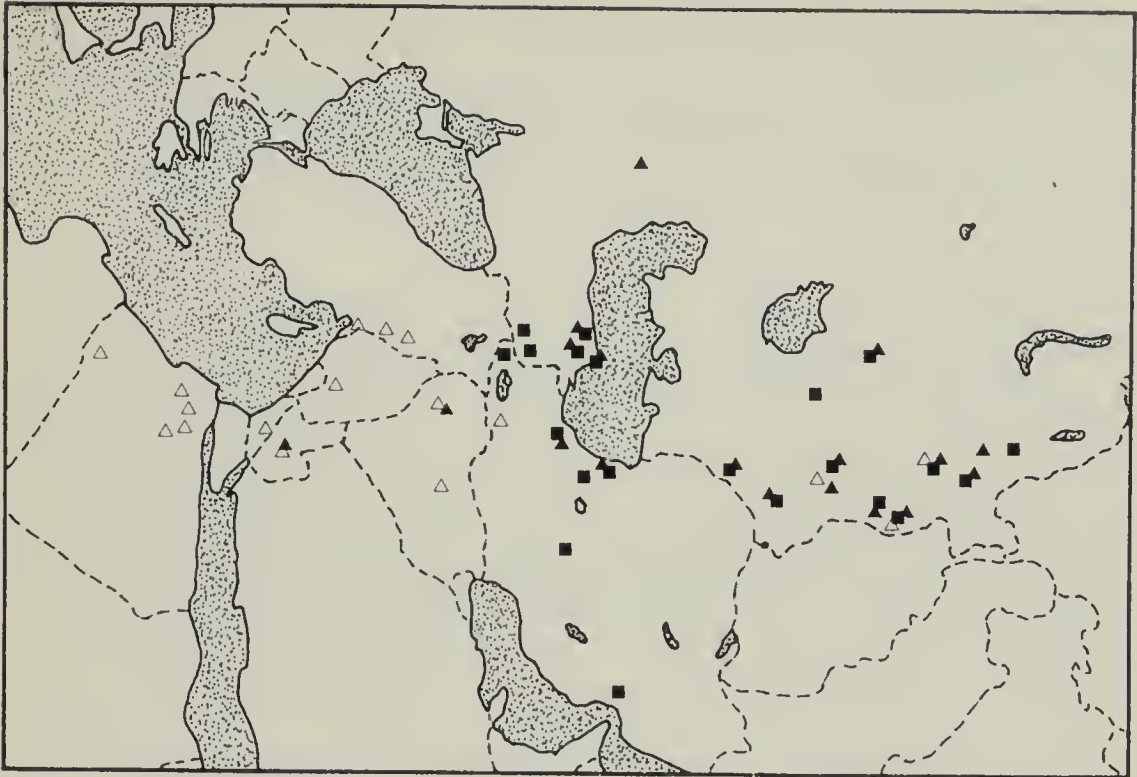


Fig. 4 - Distribution: ■ *T. sulphureus* Faust; ▲ *T. franzi* Caldara; △ *T. bedeli* Faust.

T. morawitzi Becker (fig. 3) - Iran: Bampur (MPr), Jabab Kandi (MPr); Azerbajdzan: Kura plain, Gobustan, Beygdash Hill, on *Alhagi* (CKo); Turkmenistan: Tedschen (MBu); Uzbekistan: Karaulbazar near Buchara, on *A. pseudalhagi* (CKo), Kyzylkum-Lake Ajdarkul, on *Alhagi* (CKo); Tadziki- stan: Babatag Mts. near Dushanbe, on *A. persarum* (CKo).

T. crypticus Caldara (fig. 3) - Jordan: Schaubak (CFri), Oase Asrak (CFri); Iran: Baghu (MPr, CFre). Turkey: Arsuz (CL), Göksun (CL), Kirikhan (CL), Samandagi (CL), Tarsus (CL), Türkoglu (CL).

T. dieckmanni Caldara (fig. 3) - Turkmenistan: Merw (CF); Uzbekistan: Karaulbazar near Buchara, on *A. pseudalhagi* (CKo); Tadziki- stan: Javros near Dushanbe (CFre).

T. winkleri (Franz) (fig. 1) - Azerbajdzan: Kura plain, Gobustan, Beyugd- dash Hill, on *Alhagi* sp. (CKo); Uzbekistan: Kyzylkum-Lake Ajdarkul, on *Alhagi* (CKo), Karaulbazar near Buchara on *A. pseudalhagi* (CKo).

T. urbanus Faust (fig. 2) - Uzbekistan: Karaulbazar near Buchara, on *A. pseudalhagi* (CKo); Afghanistan: Kandahar (MBu), Paropamisus Mts- Herat (MBu).

T. sulphureus Faust (fig. 4) - Azerbajdzan: Kura plain, Gobustan, Beyugd- dash Hill, on *Alhagi* (CKo); Uzbekistan: Kyzylkum-Lake Ajdarkul, on *Alhagi* sp. (CBo, CKo), Karaulbazar near Buchara, on *A. pseudalhagi* (CKo); Tadziki- stan: Babatag Mts. near Dushanbe, on *A. persarum* (CKo); Afghani- stan: Kabul, Charkhi m 1780 (MBu).

T. franzi Caldara (fig. 4) - Jordan: Oase Asrak (CFri); Azerbajdzan: Ku- ra plain, Gobustan, Beyugd- dash Hill, on *Alhagi* (CKo), Baku (CFre); Uzbeki- stan: Kyzylkum-Ajdarkul, on *Alhagi* sp. (CKo), Zeravshan m 1200, Aman

Kutan (CFre), Ashabad (CFre), Karaulbazar near Buchara, on *A. pseudalhagi* (CKo).

T. bedeli Faust (fig. 4) - Jordan: Oase Asrak (CFri); Turkey: Kirikhan (CL), Türkoglu (CL); Uzbekistan: Zeravshan Mts.-Sarykul near Samarkand, on *Alhagi* sp. (CKo); Turkmenistan: Karakum, Ashabad (CKo), Kopet-Dagh Mts., Kara-Kala, on *Alhagi* sp. (CKo).

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⁽¹⁾ CC: Caldara collection; CFre: Fremuth collection.